A 160-Meter Box-Loop Antenna

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I have used this box-loop antenna for receiving on 160 meters, and I am surprised at how well it works. I can null out interference from defective light fixtures. I use it with an inverted-V antenna for transmit, and interference that I hear on the inverted-V antenna can nearly be eliminated when receiving on the loop. Also, receiving with the loop antenna is extremely quiet. The loop is shown connected to my National NC-183D in **Figure 1**.

Construction of the Loop Antenna

Figure 2 shows the completed loop antenna. To wind my 160-meter frame-receiving antenna, I used about 100 feet of number 22-gauge, plastic-covered wire, but number 20 bare-copper wire can be also used for the main winding. It should be wound to get a whole number of turns. Seven turns gets it to 1.80 MHz if built using information from the plans.

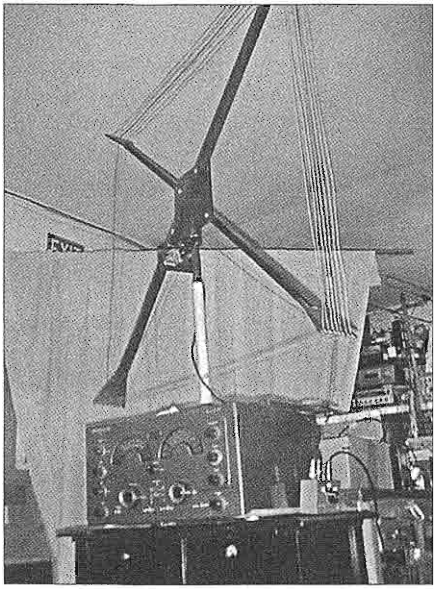

Figure 1: The 160-meter box-loop antenna is connected to the author's National NC-183D receiver.

The inductive link is over the 4th turn and a piece of RG-8/U mini coax with a PL-259 connector on the end is used to connect to the National receiver.

For tuning the loop, I use a salvaged 500-pf variable capacitor.

Figure 3 shows the "paddles" that are used to space the wire turns. Originally, I used a cardboard template to make the paddles. The paddles are 1" across the bottom and 4" across the top. They are ¾" thick and 6" long. The 7 notches at the top have a ½-inch pitch. I cut all 4 paddles from some old oak-drawer sides I had on hand.

The two long spreaders are made from wood pieces, 1" x ¾" by 53" long, and were cut with slots in the ends 2" deep so the paddles could be fit to the ends and glued in place. They spreader arms are mounted on an 8" square center plate using plastic nuts and bolts.

The upper 2" x 5 ½" support plate has solder lugs for the coax and six ½" nuts and bolts to secure the main frame wiring and inductive turn.

The lower support plate is used to hold the 500-pf variable capacitor.

When the loop was completed, I stained it with red mahogany.

If one uses the measurements from the plan, the windings and general construction will come out as symmetrical as possible since the depth of the rejected null depends on the electrical balance. Just tune in the signals on 160 meters, peak the antenna tuning control (500 pf) for maximum pickup or for maxi-

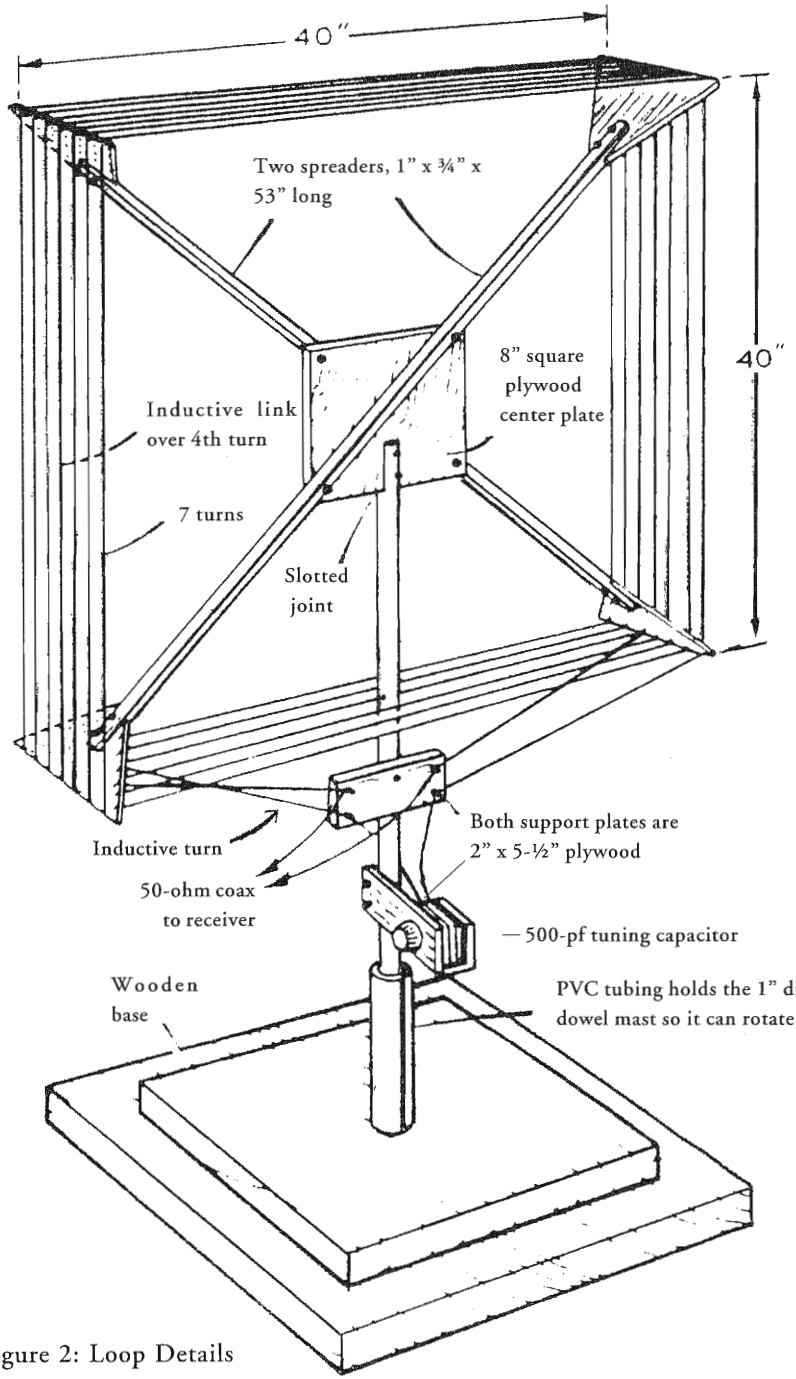
40"
Two spreaders, 1" x ¾" x 53" long
8" square plywood center plate
40"
Inductive link over 4th turn
7 turns
Slotted joint
Inductive turn
50-ohm coax to receiver
Both support plates are 2" x 5-½" plywood
— 500-pf tuning capacitor
Wooden base
PVC tubing holds the 1" dia. dowel mast so it can rotate.

Figure 2: Loop Details

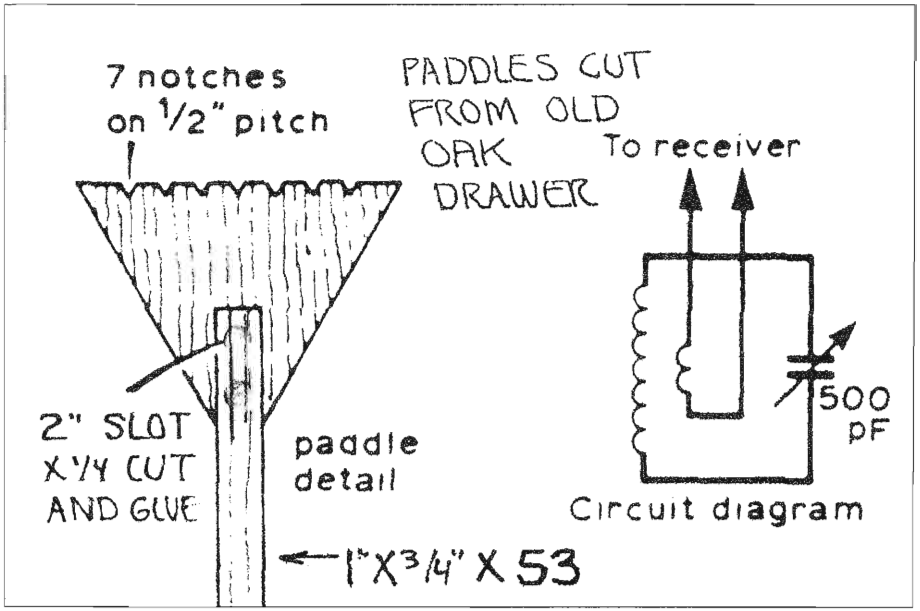

Figure 3: Detail of the paddle construction and the loop-tuning schematic. Paddle is 4-¾" across the top and 1" across the bottom, attached to spreader.

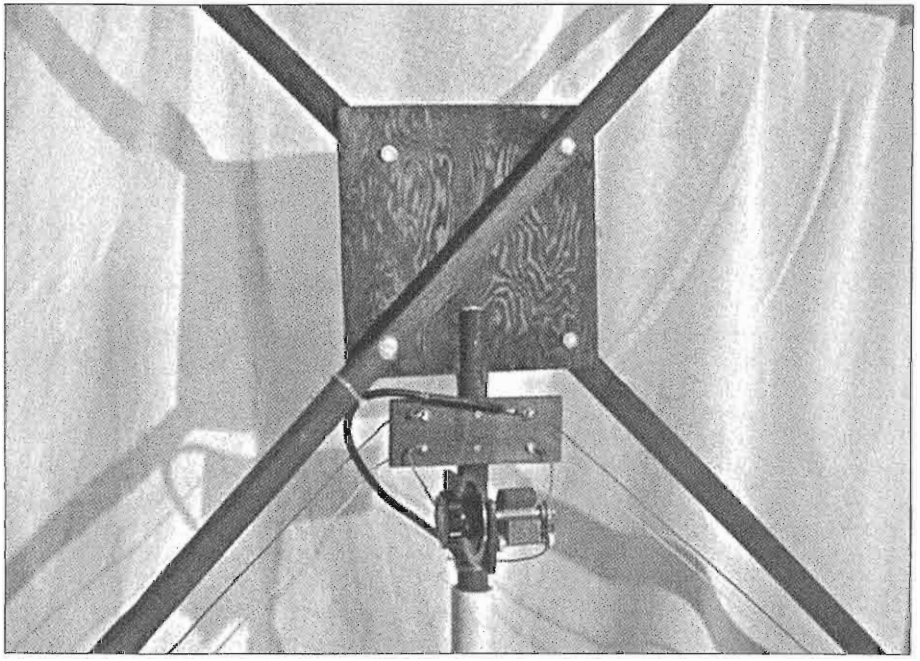

Figure 4: Closeup of the center plate and loop-tuning condenser.

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